

REMARKS

This application has been reviewed carefully in view of the Office Action mailed November 6, 2001. In that Office Action, claim 21 was rejected as indefinite under 35 U.S.C. § 112. Claims 1-4, 6-9 and 17-24 and 26 were rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Cranston, III et al., U.S. Pat. No. 5,708,563, in view of Mann, publication EP 0349285. U.S. Pat. No. 5,963,681. Claim 5 was rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Cranston, III et al. in view of Mann, and further in view of Welsh, U.S. Pat. No. 4,935,847. Claims 10, 13-15 and 25 were rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Cranston, III et al. in view of Mann, and further in view of Clements, U.S. Pat. No. 5,963,681. Claim 11 was rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Cranston, III et al. in view of Mann, and further in view of Beak, U.S. Pat. No. 5,496,185. Claim 12 was rejected under 35 U.S.C. § 103(a), as allegedly unpatentable over Cranston, III et al. in view of Mann, Clements, and Beak.

In a telephonic interview conducted May 3, 2002 September 5, 2001, Applicant's Attorney discussed the above-recited issues with the Examiner and the Primary Examiner for this application. Applicant appreciates the assistance and guidance of the Examiner and the Primary Examiner, and believes the above amendments are in alignment with the points agreed upon in the interview.

SPECIFICATION

Applicant has amended the specification to recite explicitly that the carrier is planar, and that the planes of the card and carrier are parallel. A marked-up copy has also been provided to indicate the change. This amendment adds no new matter to the specification. In particular, the planar nature of the card and the parallel orientation of the card and carrier are disclosed in the drawings. Further disclosure is provided in the specification, as supported by the drawings, where the carrier is described as having upper and lower edges, and having tracks configured to slidably receive the card in a lateral direction.

REJECTIONS UNDER 35 U.S.C. § 112

Claim 21 was rejected under 35 U.S.C. § 112, as allegedly being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Applicant has amended the claim in accordance with the interview, substituting in the term "wiring," as is supported in the paragraph starting on page 9, line 19 of the specification.

In light of the above amendment and discussion, Applicant respectfully requests the rejection of claims 21 under 35 U.S.C. § 112 be withdrawn.

REJECTIONS UNDER 35 U.S.C. § 103(a)

Independent claims 1, 8, 13, 17, 20, 21 and 22, and dependent claims 2-7, 9-12, 14-15 and 18-19 were rejected either under 35 U.S.C. § 103(a)

over Cranston III et al. in view of Mann, by themselves or in combination with other references.

Applicant has amended independent claims 1, 8, 13, 17, 20, 21 and
5 22 to reflect the structural form of the carrier and its orientation with respect to a
carried printed circuit card. This form is not obvious, no matter whether the
carrier is itself a printed circuit card, or just a planar substrate (such as a printed
circuit card without circuitry). Such a parallel-planar configuration is extremely
10 useful to a system requiring on-line replacement of any one of multiple system
cards while not interfering with the operation of other cards (as is described in
the specification). It also provides for the compact construction of systems
having a plurality of such cards (as is described in the specification), resulting in
lower construction and operational costs.

15 Applicant believes these amendments conform with the
understanding of the invention reached in the interview of May 3, 2002. In
particular, the prior art neither discloses nor suggests these features, when
combined with the other features of the invention. In light of the above
amendments and remarks, Applicant respectfully requests the rejection of claims
20 1-26 be withdrawn.

CONCLUSION

In view of the foregoing amendments and remarks, Applicant
requests favorable consideration and allowance of all claims in the application.

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Respectfully submitted,

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Version with Markings to Show Changes Made
(Paragraph Beginning on Line 22, Page 8 of the Application)

5 The carrier 11 is configured to receive, structurally support, and
electrically connect to the PCI card. The carrier preferably includes a planar
body 71 having an upper edge 73, a lower edge 75, a front end 77 and a back end
79, and further includes a handle 81 along the front end, configured for
controlling the longitudinal insertion and extraction of the carrier into and out of
10 the chassis. The first and second system connectors 13, 19 are preferably
configured to accommodate both 32-bit and 64-bit cards, and the system
connectors are rated for 5 volt and 3.3 volt applications.

Version with Markings to Show Changes Made
(Paragraph Beginning on Line 3, Page 9 of the Application)

5 The carrier 11 preferably includes one or more guides that are
configured to guide the card 17 into place on the carrier and/or to provide
structural support to the card. In particular, the carrier includes a rear guide 83
forming a rear track 85 that faces in a longitudinal direction and is configured to
slidingly receive the rearward edge 79 of the card, a front guide 87 forming a
10 front track 89 facing in a direction to slidingly receive a side of the main surface
51 of the card bulkhead 49, as well as the carrier first system connector 13. Each
of these three features slidably receive the card in a lateral direction to mate with
the carrier such that the plane of the card is parallel to the plane of the carrier.
The rear track is slidably adjustable along a slot 96 to accommodate for cards of
15 different lengths. A spring-biased pin (not shown) locks the rear track into
place, preferably at standard card lengths.

Version with Markings to Show Changes Made
(Amended Claims)

5 1. A carrier for connecting a planar printed circuit board card to a chassis,
wherein the card has a bulkhead and a lower edge including a card system
connector, wherein the chassis defines an opening for receiving a card, and
wherein the chassis includes a chassis system connector to be placed in
communication with the card system connector of the received card, the chassis
10 system connector and opening defining a carrier-insertion direction, comprising:

a planar body having a front end and a rear end;

a first system connector carried on the body and configured to mate and
communicate with the card system connector in a card-insertion direction such
that the plane of the printed circuit board card is parallel to the plane of the body;
15 and

a second system connector carried on the body and configured to mate
and communicate with the chassis system connector, wherein the second system
connector is in communication with the first system connector;

wherein the first and second system connectors are configured such that
20 the card-insertion direction differs from the carrier-insertion direction; [and]

wherein the body and the first and second system connectors are
configured such that, with the card system connector mated to the first system
connector, the second system connector fits insertably through the opening in the
chassis-insertion direction to mate with the chassis system connector; and

25 wherein the body and first system connector are configured such that the
card bulkhead would be approximately coplanar with the chassis opening when
the card system connector is mated with the first system connector and the
second system connector is mated with the chassis system connector.

30 3. The carrier of claim [2] 1, wherein the body includes integral wiring to
put the second system connector in communication with the first system
connector.

4. The carrier of claim [2] 1, and further including a guide at the front end of the body, the guide being configured to guide movements of the card in mating the card system connector with the first system connector, and the guide being configured to support the card when the card system connector is mated with the first system connector.

5. The carrier of claim [2] 1, and further including:

a guide at the front end of the body, the guide being configured to guide movements of the card in mating the card system connector with the first system connector, and the guide being configured to support the card when the card system connector is mated with the first system connector; and

a handle integral with the guide, the handle being configured for controlling the insertion and extraction of the carrier into and out of the chassis.

6. The carrier of claim [2] 1, and further including a first guide at the front end of the body and a second guide at the back end of the body, the first and second guides being configured to guide movements of the card in mating the card system connector with the first system connector, the first and second guides being configured to support the card when the card system connector is mated with the first system connector, and the second guide being adjustable to accommodate different length cards.

7. The carrier of claim [2] 1, wherein the first system connector is configured to receive a Peripheral Component Interconnect card.

8. A connection system for connecting a planar printed circuit board card to a chassis, wherein the card has a lower edge including a card system connector, wherein the card has a bulkhead extending along a side of the card that adjoins the lower edge, and wherein the chassis defines an opening for receiving a card, comprising:

a chassis system connector mounted in the interior of the chassis, the chassis system connector and opening defining a carrier-insertion direction; and a carrier, the carrier comprising

a planar body having a front end and a rear end,

a first system connector carried on the body, the first system connector being configured to mate and communicate with the card system connector in a card-insertion direction such that the plane of the printed circuit board card is parallel to the plane of the body, and

a second system connector carried on the body, configured to mate and communicate with the chassis system connector, the second system connector being in communication with the first system connector,

wherein the first and second system connectors are configured such that the card-insertion direction differs from the carrier-insertion direction;

wherein the body and the first and second system connectors are configured such that, with the card system connector mated to the first system connector, the second system connector fits insertably through the opening in the carrier-insertion direction to mate with the chassis system connector; and

wherein the body and first system connector are configured such that the card bulkhead would be approximately coplanar with the chassis opening when the card system connector is mated with the first system connector and the second system connector is mated with the chassis system connector.

13. A computer system configured to be connected to a plurality of planar printed circuit board cards, wherein each card has a lower edge including a card system connector, and wherein each card has a bulkhead extending along a side of the card that adjoins the lower edge, comprising:

5 a chassis defining an interior and one or more openings into the interior for receiving the plurality of cards;

a central processing unit;

a bus connecting to the central processing unit;

10 a plurality of chassis system connectors mounted in the interior of the chassis and connected to the bus, each of the plurality of chassis system connectors defining a carrier-insertion direction with one of the one or more openings;

a plurality of carriers, each carrier comprising

15 a planar body having a front end and a rear end,

a first system connector carried on the body, the first system connector being configured to mate and communicate with the card system connector of at least one of the plurality of cards in a card-insertion direction such that the plane of the at least one printed circuit board card is parallel to the plane of the body, and

20 a second system connector carried on the body, configured to mate and communicate with at least one of the plurality of chassis system connectors, the second system connector being in communication with the first system connector,

25 wherein the first and second system connectors are configured such that the card-insertion direction differs from the carrier-insertion direction; and

30 a plurality of guides, each guide being configured to guide at least one of the plurality of carriers through one of the one or more chassis openings, and further guide the second system connector of the guided carriers to mate with one of the chassis system connectors;

wherein each body and corresponding first and second system connectors are configured such that, with one of the plurality of card system connectors mated to the first system connector, the second system connector fits insertably through at least one opening in the carrier-insertion direction to mate with at least one of the plurality of chassis system connectors; and

wherein each body and first system connector are configured such that the card bulkhead would be approximately coplanar with one of the one or more chassis openings when the card system connector is mated with the first system connector and the second system connector is mated with one of the plurality of chassis system connectors.